

REMARKS

Applicants will now address each of the Examiner's objections and rejections in the order in which they appear in the Final Rejection.

I. Drawings

In the Final Rejection, the Examiner objects to the drawings under 37 CFR §1.83(a) as not showing every feature of the invention specified in the claims. In particular, the Examiner states that “the p-channel TFT of the driver circuit not having an LDD region must be shown or the feature(s) canceled from the claim(s).”

In response, Applicants are correcting Fig. 2D so that 144a, 144b, 145a and 145b all have the same cross hatching. Applicants respectfully submit that this does not constitute new matter as Fig. 2D shows that the fourth concentration p-type impurity regions 144 and 145 are formed by ion doping using diborane. Hence, 144 and 145 have the same concentration of p-type impurity. Figs. 3A-3F have also been amended so that they are consistent with corrected Fig. 2D.

Applicants note, however, that in his Response to Arguments, the Examiner contends that it should be noted that source regions 207a and drain regions 208a can clearly be interpreted as LDD regions when the specification is taken as a whole. The Examiner further states that the originally filed specification states on page 25, lines 12-25 that p-type impurity regions 144b and 145b (which later are regions 207a and 208a) have a doping concentration of between 1×10^{16} and 5×10^{19} atoms/cm³.

Applicants disagree. The Examiner's understanding, that source regions 207a and drain regions 208a can clearly be interpreted as LDD regions, is incorrect.

More specifically, page 25, lines 21-25 of the specification states as follows:

“In a previous step, phosphorous has been doped into the fourth concentration p-type impurity regions 144 and 145. Accordingly, the fourth concentration p-type impurity regions 144a and 145a has a concentration of between 1×10^{20} and 1×10^{21} atoms/cm³ and the fourth concentration p-type impurity regions 144b and 145b has a concentration of between 1×10^{16} and 5×10^{19} atoms/cm³.”

Applicants respectfully submit that the above description means that the fourth concentration p-type impurity regions 144a and 145a have a **phosphorous** concentration of between 1×10^{20} and 1×10^{21} atoms/cm³, and the fourth concentration p-type impurity regions 144b and 145b have a **phosphorous** concentration of between 1×10^{16} and 5×10^{19} atoms/cm³.

Hence, this does not mean the p-type impurity region has LDD regions as the 1×10^{16} and 5×10^{19} atoms/cm³ is a phosphorous concentration.

In addition, TFTs 200 and 202 are p-type TFTs, and boron provides a p-type conductivity. Therefore, the difference between a phosphorous concentration of regions 144a, 145a and that of 145a, 145b does not make a contribution to the p-type conductivity when boron is at a concentration of 1.5 to 3 times that of phosphorous is doped in the regions 144 (144a and 144b) and 145 (145a and 145b). Therefore, the regions 207a, 208a, 214a and 215a are not LDD regions of TFTs 200 and 202.

Accordingly, Applicants respectfully request that this objection be withdrawn.

II. Claim Rejections - 35 USC §112

The Examiner also rejects Claims 1, 3, 21, 23, 25, 27 and 53 under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the Examiner objects to the phrase “wherein the p-channel TFT of the driver circuit does not having an LDD region” as having no support in the specification.

For substantially the same reasons discussed above, it is respectfully submitted that this limitation has support in the application and drawings. Accordingly, it is requested that this rejection be withdrawn.

III. Claim Rejections - 35 USC §103

In the Final Rejection, the Examiner has the following rejections under 35 USC §103:

- a. Claims 1 and 25 as being unpatentable over Matsumoto in view of Shimone and Adan et al.;
- b. Claims 3 and 27 as being unpatentable over Matsumoto in view of Shimone and Karauchi et al., and Adan et al.; and
- c. Claims 21 and 23 as being unpatentable over Matsumoto in view of Shimone, and Karauchi et al. and Adan et al. and further in view of Hioki; and
- d. Claim 53 as being unpatentable over Matsumoto in view of Shimone, Takasu and Adan

Each of these rejections is respectfully traversed.

The present invention, as recited in the independent claims, is directed to a semiconductor device comprising a pixel section having a pixel TFT over a substrate and a driver section comprising a p-channel TFT and an n-channel TFT over the substrate. The pixel TFT has at least one LDD region, the p-channel TFT of the driver circuit does not have a LDD region, and the n-channel TFT of the driver circuit has at least one LDD region which partly overlaps a gate electrode of the pixel TFT

In contrast, Matsumoto discloses in Fig. 1 each of the pixel TFT, the p-channel TFT and the n-channel TFT as having a pair of LDD regions. Hence, neither Matsumoto nor any of the other cited references disclose or suggest the structure claimed in the present application.

Therefore, the independent claims, and those claims dependent thereon, are patentable over the cited references. Accordingly, it is respectfully requested that the rejections of the claims be withdrawn, and the claims allowed.

Conclusion


It is respectfully submitted that the present application is now in a condition for allowance and should be allowed.

Please charge our deposit account 50/1039 for any further fee for this amendment.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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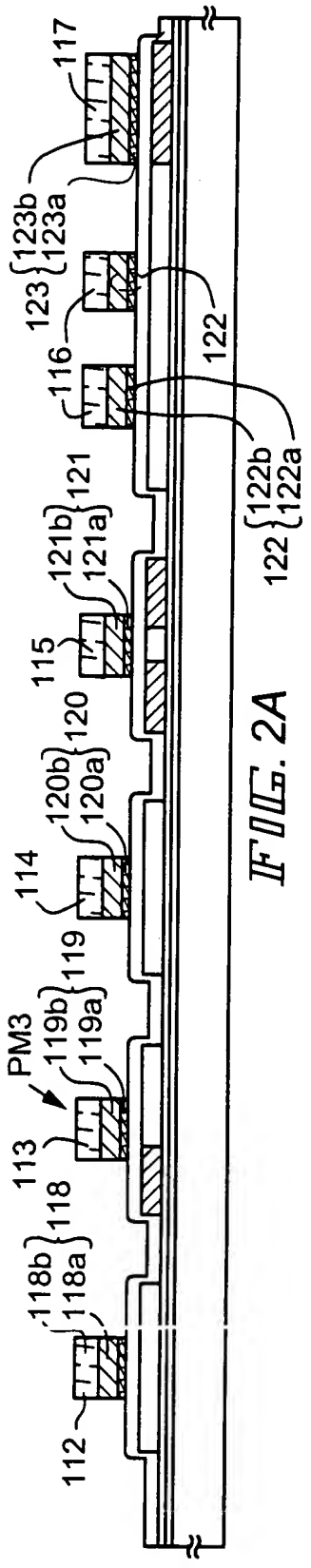


FIG. 2A

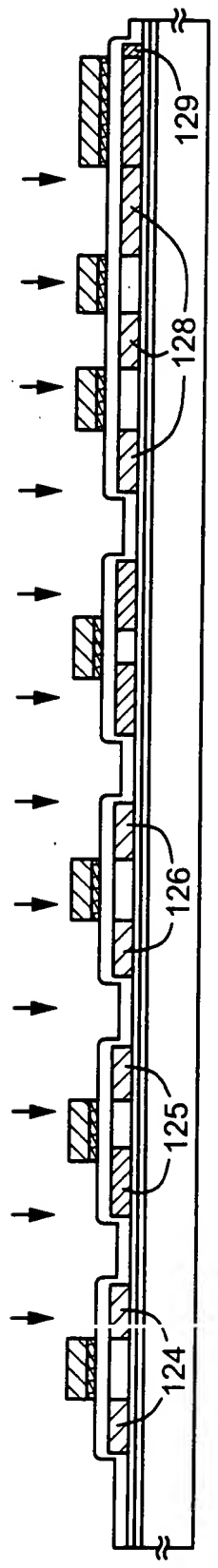
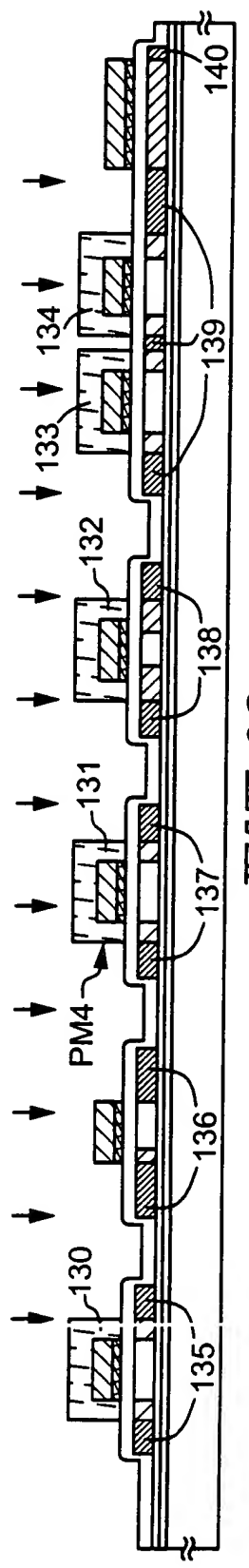


FIG. 2B



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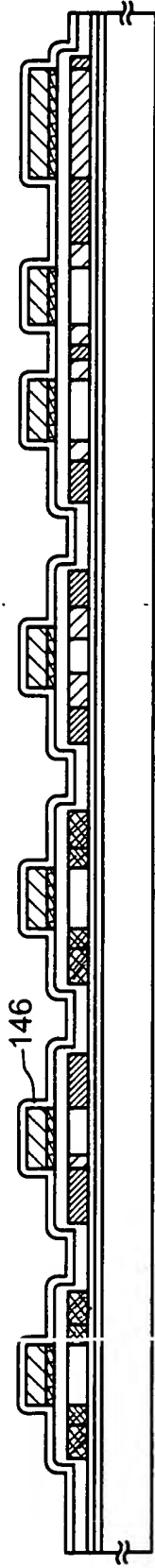


FIG. 3A

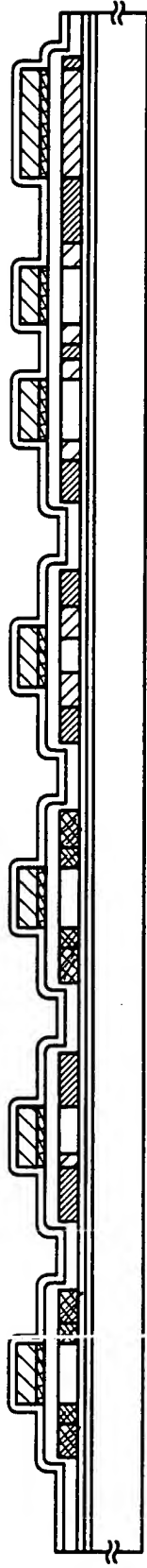


FIG. 3B

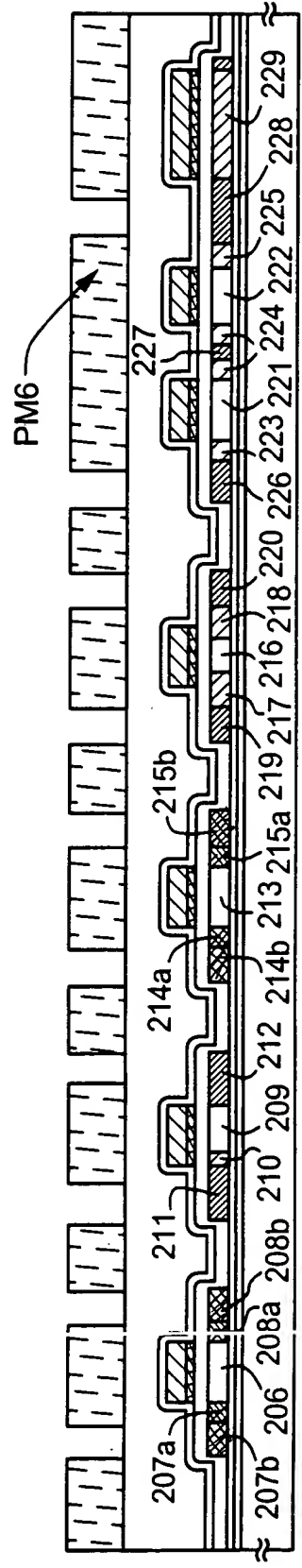
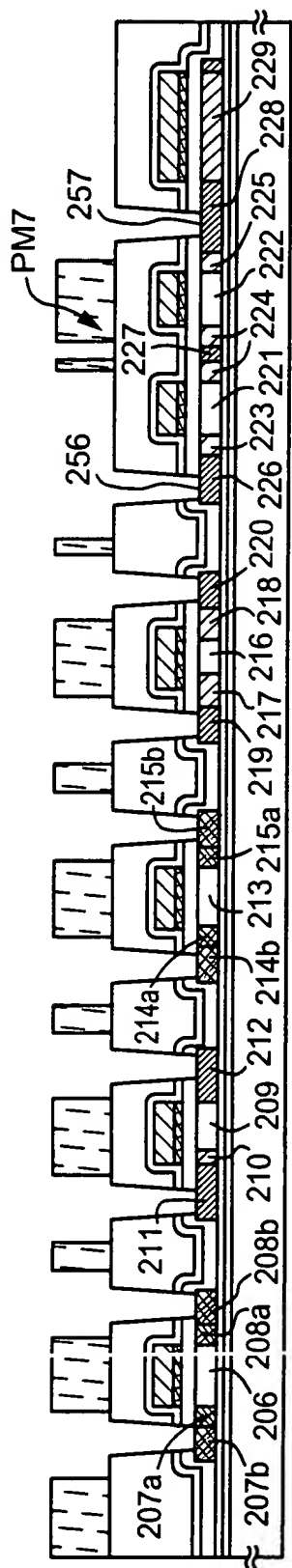
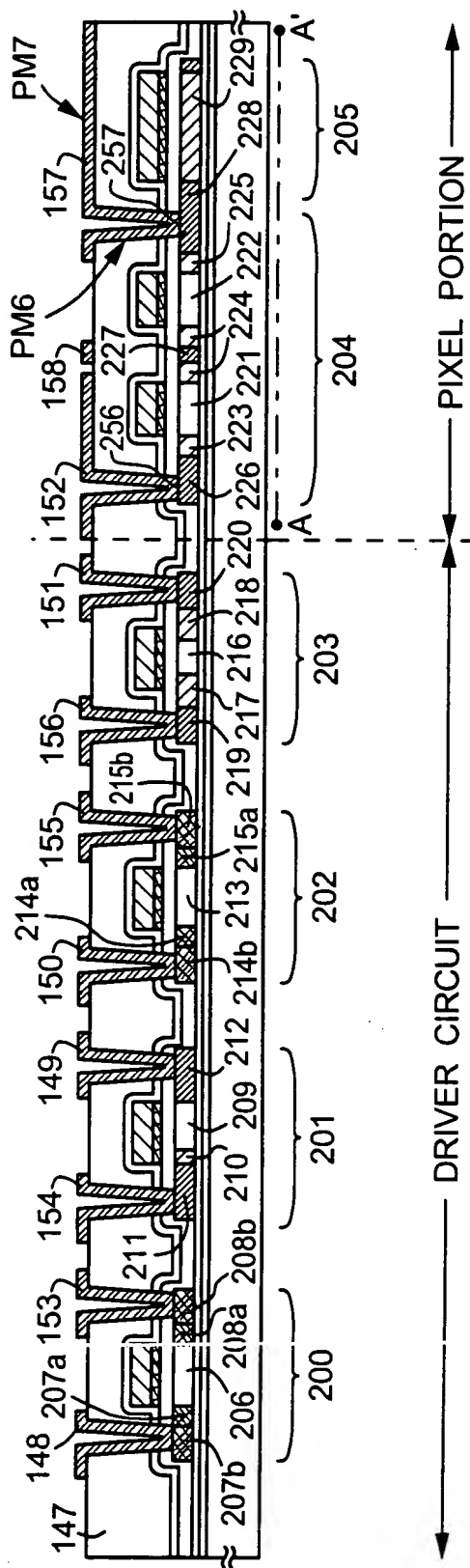


FIG. 3C





FILE. 3D



FILE. 3F